

CONTINUOUS TRANSFORMATION OF RASTER MAPS INTO VECTOR MAPS OR MIXED VECTOR/RASTER MAPS

QUINQUENEL H.(1), GLOOR T.(2)

(1) Ecole Nationale des Sciences Géographiques, PARIS, FRANCE ; (2) OCAD Inc., BAAR, SWITZERLAND

BACKGROUND AND OBJECTIVES

Even today, many topographic maps are only available in raster formats. However, the advantages of vector data are obvious nowadays. Therefore, procedures are needed to produce 100% vector databases, with photogrammetry processing or by means of converting raster data into vector data. For the first solution, specifications and quality must be adequate for cartographic needs. It involves complex developments for generalisation tools and line features management to make further updates possible. For the second solution, there are many automatic and semi-automatic procedures already available: the main disadvantage of those procedures is that the whole map must be processed, which could be very time-consuming and expensive.

APPROACH AND METHODS

Therefore, the French Institut Géographique National (IGN), Paris, France, was looking for a process involving only parts of the map subject to change. OCAD Inc. has implemented such a procedure into their software OCAD. The stabilized workflow can be described as follows: georeferenced print films – either newly scanned or already available in digital format – are loaded as a tile of high resolution background maps and assigned by their true colors (i.e. cartographic themes). In the spot color view mode, the map appears on the screen in its original colors. In an additional step, the map sketch (vector or raster) and orthophoto are loaded, so operators can easily see all the updates to apply and obsolete details to erase from the raster files using “delete vector areas” and “special delete colors” designed for each subject. In map draft view mode, the transparency of the drawing layers and the map background can be set individually. Afterwards, the new situation will be added in accordance with the orthophoto by drawing new features with exactly the same symbols set as in the previous map. To print the updated map, all the vectorial additions and deletions are rasterised and reproduced in the print films according to their true original colors.

RESULTS AND CONCLUSION

This workflow – involving about 100 cartographers/topographers – has been carried out at IGN to maintain around 80% of the 1800 sheets 1:25 000 and most sheets of the 1:50 000 map of France successfully; as of today, about 2,000 sheets have been updated with this method. The tools are so ergonomic and the process so efficient that, in only 3 years, the 1:25 000 scale map’s production has been multiplied by 3. From 2002 to 2010, the average age per sheet was cut – with very minimal support work – from 12 to 6 years.

IGN-France International, an IGN subsidiary for foreign assignments, has also been able to take advantage of this experience to propose similar processes (or others) based on OCAD, Geoview (IGN-Espace software used for stereoplotting and aerial/spatial raster management) and Geographic Information Systems to store and analyse those data. Prototypes have been made with SPOT images for Libyan and Serbian geographic institutes and operators from Gabon and Burkina Faso have been trained to update or create their own national cartography quickly and easily.